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### (54) Title: SULFONAMIDE DERIVATIVES AS ANTIPSYCHOTIC AGENTS



(57) Abstract: The invention provides compounds of formula (I) wherein A and B represent the groups -(CH<sub>2</sub>)<sub>m</sub>- and -(CH<sub>2</sub>)<sub>n</sub>-respectively; R¹ represents C<sub>1-6</sub>alkyl; R² represents hydrogen, halogen, hydroxy, cyano, nitro, hydroxyC<sub>1-6</sub>alkyl, trifluoromethyl, trifluoromethoxy, C<sub>1-6</sub>alkyl, C<sub>1-6</sub>alkoxy, -(CH<sub>2</sub>)<sub>p</sub>C<sub>3-6</sub>cycloalkyl, -(CH<sub>2</sub>)<sub>p</sub>OC<sub>3-6</sub>cy-

cloalkyl, -CO2<sub>1-6</sub>alkyl, -SO2<sub>1-6</sub>alkyl, -SO2<sub>1-6</sub>alkyl, -S-C<sub>1-6</sub>alkyl, -CO<sub>2</sub>C<sub>1-6</sub>alkyl, -CO<sub>2</sub>NR<sup>4</sup>R<sup>5</sup>, -SO<sub>2</sub>NR<sup>4</sup>R<sup>5</sup>, -(CH<sub>2</sub>)<sub>p</sub>NR<sup>4</sup>COR<sup>5</sup>, an optionally substituted aryl group, an optionally substituted heteroaryl group or an optionally substituted heterocyclyl group; R<sup>3</sup> represents hydrogen or C<sub>1-6</sub>alkyl; Ar<sup>1</sup> represents an optionally substituted heteroaryl group; Ar<sup>2</sup> represents an optionally substituted phenyl or an optionally substituted heteroaryl group; Y represents a bond, -O-, -C<sub>1-6</sub>alkyl-, -CR<sup>6</sup>R<sup>7</sup>X-, -XCR<sup>6</sup>R<sup>7</sup>-, -NR<sup>8</sup>CO- or -CONR<sup>8</sup>-; X represents oxygen, sulfur, -SO- or -SO<sub>2</sub>-; R<sup>4</sup> and R<sup>5</sup> each independently represent hydrogen or C<sub>1-6</sub>alkyl or, together with the nitrogen or other atoms to which they are attached, form an azacycloalkyl ring or an oxo-substituted azacycloalkyl ring; R<sup>6</sup> and R<sup>7</sup> each independently represent hydrogen, C<sub>1-6</sub>alkyl or fluoro; R<sup>8</sup> represents hydrogen or C<sub>1-6</sub>alkyl; m and n independently represent an integer selected from 1 and 2; p independently represents an integer selected from 0, 1, 2 and 3; or a pharmaceutically acceptable salt, solvate or pharmaceutically acceptable derivative thereof. The compounds are useful in therapy, in particular as antipsychotic agents.

### ABSTRACT OF THE DISCLOSURE

The invention provides compounds of formula (I):

$$R^4$$
 $R^3$ 
 $N-R^1$ 
 $R^3$ 
 $N-R^1$ 

wherein

A and B represent the groups  $-(CH_2)_m$  and  $-(CH_2)_n$  respectively;

R<sup>1</sup> represents hydrogen or C<sub>1,6</sub>alkyl;

 $R^2$  represents hydrogen, halogen, hydroxy, cyano, nitro, hydroxy $C_{1-6}$ alkyl, trifluoromethyl, trifluoromethoxy,  $C_{1-6}$ alkyl,  $C_{1-6}$ alkoxy,  $C_{1-6}$ fluoroalkoxy,  $-(CH_2)_pC_{3-6}$ cycloalkyl,  $-(CH_2)_pOC_{3-6}$ cycloalkyl,  $-COC_{1-6}$ alkyl,  $-SO_2C_{1-6}$ alkyl,  $-SOC_{1-6}$ alkyl,  $-SOC_{1-6}$ alkyl,  $-SOC_{1-6}$ alkyl,  $-CO_2NR^5R^6$ ,  $-SO_2NR^5R^6$ ,  $-(CH_2)_pNR^5R^6$ ,  $-(CH_2)_pNR^5COR^6$ , optionally substituted aryl ring, optionally substituted heteroaryl ring or optionally substituted heterocyclyl ring;

 $R^3$  represents hydrogen, halogen, hydroxy, cyano, nitro, hydroxyC<sub>1-6</sub>alkyl, trifluoromethyl, trifluoromethoxy, C<sub>1-6</sub>alkyl, C<sub>1-6</sub>alkoxy, C<sub>1-6</sub>fluoroalkoxy, -(CH<sub>2</sub>)<sub>p</sub>C<sub>3-6</sub>cycloalkyl, -(CH<sub>2</sub>)<sub>p</sub>OC<sub>3-6</sub>cycloalkyl, -COC<sub>1-6</sub>alkyl, -SO<sub>2</sub>C<sub>1-6</sub>alkyl, -SOC<sub>1-6</sub>alkyl, -S-C<sub>1-6</sub>alkyl, -CO<sub>2</sub>C<sub>1-6</sub>alkyl, -CO<sub>2</sub>NR<sup>7</sup>R<sup>8</sup>, -SO<sub>2</sub>NR<sup>7</sup>R<sup>8</sup>, -(CH<sub>2</sub>)<sub>p</sub>NR<sup>7</sup>R<sup>8</sup> or -(CH<sub>2</sub>)<sub>p</sub>NR<sup>7</sup>COR<sup>8</sup>; R<sup>4</sup> represents hydrogen, hydroxy, C<sub>1-6</sub>alkyl, C<sub>1-6</sub>alkoxy, C<sub>1-6</sub>fluoroalkoxy, trifluoromethyl, trifluoromethoxy, halogen, -OSO<sub>2</sub>CF<sub>3</sub>, -(CH<sub>2</sub>)<sub>p</sub>C<sub>3-6</sub>cycloalkyl, - (CH<sub>2</sub>)<sub>p</sub>OC<sub>1-6</sub>alkyl or -(CH<sub>2</sub>)<sub>p</sub>OC<sub>3-6</sub>cycloalkyl;

R<sup>3</sup> and R<sup>6</sup> each independently represent hydrogen, C<sub>1.6</sub>alkyl or, together with the nitrogen or other atoms to which they are attached, form an azacycloalkyl ring or an oxo-substituted azacycloalkyl ring;

R<sup>7</sup> and R<sup>8</sup> each independently represent hydrogen or C<sub>1.6</sub>alkyl; m and n independently represent an integer selected from 1 and 2; p independently represents an integer selected from 0, 1, 2 and 3; q independently represents an integer selected from 1, 2 and 3; or a pharmaceutically acceptable salt or solvate thereof, with the proviso that the compounds 8-hydroxy-3-methyl-7-phenylsulfonyl-2,3,4,5-tetrahydro-1H-3-benzazepine, 8-hydroxy-7-4-(hydroxyphenyl)sulfonyl-2,3,4,5-tetrahydro-1H-3-benzazepine, 7-phenylsulfonyl-1,2,3,4-tetrahydroisoquinoline and 7-phenylsulfonyl-1,2,3,4-tetrahydroisoquinoline hydrochloride are excluded.

The compounds are useful in therapy, in particular as antipsychotic agents